

IN THE SPECIFICATION

Please amend the paragraphs of the specification as follows:

Please replace paragraph 0005 on page 2 with the following amended paragraph:

Both voice and data services are available using CDMA communication systems made in accordance with IS-95. However, disadvantageously, data calls use the same airlink protocols, traffic channels, physical layers, signaling methods, call processing schemes and airlink protocols ~~[[are]]~~ as used by the voice calls. While the prior art call processing schemes and signaling methods are efficient and effective for voice services, they are inefficient for data services, especially when the data services comprise very short duration calls. As ~~[[is]]~~ described in more detail below, it can take between two and three seconds to establish or “setup” an average voice traffic channel using the prior art call processing schemes. While this setup time may be acceptable for a voice call that, on the average, may have a duration of between 100 and 300 seconds, it is unacceptable for a data call having a duration of only a few seconds, or less. Therefore, an improved technique is needed for assigning data traffic channels in a CDMA communication system. The causes of traffic channel assignment delays in the prior art systems become apparent by reviewing CDMA call flow examples. Therefore typical prior art CDMA call flow examples are now described.

Please replace paragraph 0008 on page 4 with the following amended paragraph:

In normal CDMA operation, when a mobile station user initiates a phone call, the mobile station sends an access probe to the base station. If the access probe is properly received by the base station, the mobile station should receive back an acknowledgement from the base station. Once the acknowledgement is received by the mobile station, the mobile station is instructed by the base station to wait and to stop sending further access probes to the base station. This is necessary because access probes produce interference on the communication channel. The mobile station therefore waits until it is assigned a traffic channel by the base station. The base station then communicates this request for a traffic channel and information about the mobile

station to a base station controller (BSC). The BSC performs several administrative functions, possibly including authenticating the mobile station[[]]. The BSC then reviews the pool of available resources and allocates an element for the requesting mobile station.

Please replace paragraph 0009 on page 4 with the following amended paragraph:

As shown in Table 1, the base station informs the mobile station of the traffic channel assignment by sending a channel assignment message via the paging channel. Once the mobile station receives its channel assignment from the base station, it changes its receive and transmit frequencies, in addition to other relevant parameters, to the assigned traffic channel. The mobile station then attempts to initiate communication on the assigned traffic channel by establishing or “setting up” the traffic channel. If the traffic channel initialization is successful, the mobile station then acquires the traffic channel. The mobile station then begins sending a preamble on the reverse traffic channel to allow the base station to acquire the mobile station. As shown in Table 1, the base station acquires the reverse traffic channel and sends a base station acknowledgement order to the mobile station if the reverse traffic channel was properly acquired. At this point the mobile station and the base station begin negotiating service. The communication link can fail at any point during this negotiation process. However, if the negotiation process is successful, communication commences and a telephone conversation ensues. If the mobile station receives pilots from more than one base station, it may then request the allocation of additional traffic channels from the other base stations.

Please replace paragraph 0023 on page 9 with the following amended paragraph:

As shown in FIGURE 1, the mobile station 102 communicates with the base station 104 via an air interface or airlink 112. The base station 104 typically comprises at least one network access point or base station transceiver subsystem (BTS) 114 with a transceiver 160 and at least one radio link protocol (RLP) and signaling manager (RSM) 116. The BTS 114 provides the communication interface between the plurality of radio frequency (RF) mobile stations 102 and a fixed (typically wired) data communications network. The RSM 116 performs signaling and radio link protocol management functions. In addition, the RSM maps user addresses provided by a data router (for example, as shown in FIGURE 1, the IP router 106) to mobile station

identifiers, and vice versa. Some systems include only one RSM 116 per base station 104; others may include an RSM 116 for each BTS 114. A more detailed description of the operation and functions performed by the mobile station 102, the base station 104, and the IP router 106 is beyond the scope of the present invention.

Please replace paragraph 0033 on page 12 with the following amended paragraph:

In accordance with the present method and apparatus, immediately following transmission of the pilot preamble 202, the mobile station transmits the traffic channel request message 204. The traffic channel request 204 includes data that identifies the mobile station to the base station. When requesting a traffic channel, the mobile station should previously have been assigned an MSI by the base station (as a result of a previous registration operation) and therefore, the mobile station preferably includes its MSI as a part of the traffic channel request 204. If an MSI was not previously obtained, the mobile station should first register with the base station before initiating a traffic channel request. During the registration process, the mobile station uses a randomly generated number instead of the MSI. After obtaining an MSI from the base station, the mobile station uses the MSI to identify itself during subsequent transmissions. In addition to transmitting its identifier, the mobile station also transmits data (in the traffic channel request 204) that identifies the signal strengths and identities of all other base stations having received signal strengths exceeding a pre-determined threshold.

Please replace paragraph 0034 on page 13 with the following amended paragraph:

In one embodiment of the present invention, the traffic channel request includes a transaction identifier, a reference pilot, a pilot strength indicator, and a timer status field. The transaction identifier identifies each transaction between the requesting mobile station and the selected base station. The mobile station sets the transaction identifier to a selected number and uses this number in other messages associated with the transaction. The reference pilot is set by the mobile station to the ~~pseudo-number~~ pseudo-noise (PN) sequence offset of the pilot channel used by the mobile station to derive its time reference (the reference pilot), relative to a zero offset pilot PN sequence. The pilot strength indicator is set by the mobile station to a computed value that is based upon the strength of the pilot channel received from the base station. In one

embodiment, this strength estimate is computed as the sum of the ratios of received pilot energy per “chip” (“ E_c ”) to the total received spectral density (“ I_o ”) (signal and noise energy), for at most k multi-path components (where k is the maximum number of multi-path components that can be concurrently demodulated by the mobile station). The timer status field is set by the mobile station and indicates whether a pilot drop timer corresponding to the pilot channel has expired.

Please replace paragraph 0038 on page 14 with the following amended paragraph:

In one embodiment, the base station specifies in the traffic channel assignment message the parameters of all of the traffic channels assigned to serve a specified mobile station. For example, in one embodiment, the traffic channel assignment message includes a transaction identifier, a channel record (comprising a thirty-two bit number to identify the channel assigned to the mobile station), ~~[[and]]~~ one or more occurrences of a pilot pseudo-random ~~number~~ noise (“PilotPN”) field, and a power control bit field. The transaction identifier identifies each transaction between the mobile station and the base station. The base station sets the transaction identifier to a selected number and uses this number in other messages associated with the transaction (e.g., traffic channel request messages and registration messages). The channel record includes both a system channel RF frequency to be used by the mobile station and a related CDMA system type. The pilotPN field contains the PN offset of the base station that the mobile station will communicate with in order to exchange subsequent traffic channel transmissions. The base station associated with the PN offset will transmit a power control bit to the mobile station during subsequent traffic data exchanges. In addition, the mobile station uses the pilotPN field to identify the base station that it is allowed to transmit its DRC channel to. This field also informs the mobile station of the control channel and forward traffic channel that the mobile station will monitor. The power control bit field is set by the base station to indicate the power control sub-channel number assigned to the mobile station.

Please replace paragraph 0041 on page 16 with the following amended paragraph:

In order for the mobile station to begin transmitting data on the reverse link immediately after transmission of the access probe, the mobile station must select one from among ~~one of the~~

available power control groups. In accordance with one embodiment of the present invention, the base station advertises a range of available power control groups on the forward link. The mobile station randomly selects one of the available power control groups and requests the selected group in the access probe. Thereafter, the mobile station uses the selected power control group to begin transmitting data on the reverse channel. As soon as the mobile station selects a power control sub-channel, the base station removes the selected sub-channel from the available power control sub-channel list. The time necessary to detect a power control group selection and to remove the selected group from the available power control sub-channel list is very short as compared to the mean time between call originations. Therefore, there is very little chance that two mobile stations will randomly select the same power control sub-channel. However, should two mobile stations choose the same power control bits, the call will terminate in a call set-up failure and the mobile station will re-initiate the call processing sequence.

Please replace paragraph 0058 on page 2 with the following amended paragraph:

The rapid channel assignment method of the present invention preferably executes on microprocessors 150, 152, 154 or other data processing devices in both the mobile station and the base station. The mobile station cooperates with the base station as described above to rapidly and efficiently request and assign traffic channels in a wireless packet communication system. The method and apparatus of the present invention can alternatively be implemented using any convenient or desirable sequencing devices such as state machines, present state-next state discrete logic, or field programmable gate array devices. The rapid channel assignment methods described above can be implemented in hardware (i.e., "hardwired") or alternatively can be implemented using programmable devices.